



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,722	07/06/2004	Wolfgang Richter	53193	6694

26474 7590 04/26/2006

NOVAK DRUCE DELUCA & QUIGG, LLP  
1300 EYE STREET NW  
SUITE 400 EAST TOWER  
WASHINGTON, DC 20005

EXAMINER

NAGUBANDI, LALITHA

ART UNIT	PAPER NUMBER
----------	--------------

1621

DATE MAILED: 04/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/500,722		RICHTER ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Lalitha Nagubandi		1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>07/06/2004</u> .  | 6) <input type="checkbox"/> Other: ____.                                    |

***Detailed Office Action***

***Status of Claims***

Claims 1-9 are pending. Claims 1-9 are considered for examination in this office action.

***Request for related document***

The examiner has hereby requested the applicant to provide the translation of the written opinion in PCT/EP2003/000419.

***Specification***

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Zehner et al (USP No. 4,778,929 dt. Oct. 18<sup>th</sup>, 1988) and Cornils et al (USP No. 4,523,036 dt. June 11<sup>th</sup>, 1985).

Applicants claim a hydroformylation process in which atleast one olefin (2 to 6 carbon atoms) is reacted continuously with carbon monoxide and hydrogen in the presence of a hydroformylation catalyst. The material components are present in a reaction zone in which a liquid phase is present and a stream is taken from the liquid phase, heat is removed from this stream and the stream is subsequently returned to the reaction zone without removal of a material component. Further the heat withdrawn from the stream is brought into contact with a heat exchanger without the intervention of an auxiliary medium for heat transfer. An out put is taken from the reaction zone and is subjected to a single stage or multistage separation and at least part of the stream comprising the major part of the unreacted olefin is returned to the reaction zone.

Zehner et al teach a process for the continuous hydroformylation of an olefin of 2 to 4 carbon atoms with CO/H<sub>2</sub> gas mixture in presence of rhodium complex as a catalyst in a liquid reaction zone and the major part of the material being recycled to the reactor (see column 5, lines 20-35, USP No. 4,778,929 dt. Oct. 18<sup>th</sup>, 1988).

Cornils et al teach a process for the preparation of an aldehyde comprising contacting a starting material comprising an olefin, carbon monoxide, hydrogen and water in the presence of a water-soluble rhodium-phosphine complex, as a catalyst. In this process the removal of the heat of reaction takes place without the aid of an auxiliary medium (see column 6 lines 55-60, USP No. 4,523,036 dt. June 11<sup>th</sup>, 1985). The process further teaches the distilling of the aldehyde from the rest of the unreacted components (see column 7 lines 15-30).

Zehner et al is silent about the removal of heat of reaction and Cornils et al is silent about the details of the process wherein carbon monoxide is fed into the stream before it is depleted to such an extent that the olefin reacts with the hydrogen to form hydrogenation products.

However, one of ordinary skill in the art of process chemistry/process engineering would have been motivated to modify the process of the hydroformylation of olefin compounds, in view of the teachings of the above references.

As to the limitations of claims 8 and 9, it would have been obvious to a skilled artisan to perform the reaction in the stream at least until the removal of the heat and the key components resulting in undesirable secondary reactions/undesirable products.

### ***Conclusion***

Claims 1-9 are rejected.

Art Unit: 1621

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lalitha Nagubandi whose telephone number is 571 272 7996. The examiner can normally be reached on 6.30am to 3.00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571 272 0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lalitha Nagubandi  
Patent Examiner  
Technology Center 1600

April 24<sup>th</sup>, 2006.



Samuel A Barts Ph.D.

Primary Patent Examiner  
Technology Center 1600

Application/Control Number: 10/500,722  
Art Unit: 1621

Page 6